

## Mercury Levels in Some Fish Pose Health Concerns For Children and Women of Childbearing Age

As a coastal state, Washington is a haven for seafood lovers. Fish is an excellent, low-fat food and a great source of protein, vitamins, and minerals. Eating a variety of fish and shellfish contributes to a balanced, healthy diet. However, some species of fish contain mercury levels that present health concerns for children and women of childbearing age.

In April, the Washington State Department of Health (DOH) issued a statewide "Fish Consumption Advisory." It expands on a federal advisory by the U.S. Food and Drug Administration that warns women of childbearing age and children under age 6 not to eat any shark, swordfish, tilefish, or king mackerel. The DOH advisory extends that warning to both fresh-caught and frozen tuna steaks. It also recommends that children, and women who are or who may become pregnant, limit their eating of canned tuna, based on their bodyweight. Guidelines are:

- Women of childbearing age should limit the amount of canned tuna they eat to about one can per week (6 oz). A woman who weighs less than 135 pounds should eat less than one can of tuna per week.
- Children under age 6 should eat less than one-half a can of tuna (3 oz) per week. Specific weekly limits for children under 6 range from 1 ounce for a child who weighs about 20 pounds, to 3 ounces for a child who weighs about 60 pounds.

### Mercury Exposure

Mercury contamination is a worldwide problem. Methylmercury is commonly found in many kinds of fish, especially large species that eat smaller fish and also

those that are long-lived. Last year, the National Research Council reported on the toxicological effects of methylmercury.<sup>1</sup> In January, the Centers for Disease Control and Prevention (CDC) published data<sup>2</sup> indicating that most of the exposure in young children and women of childbearing age in the United States results from eating fish contaminated with methylmercury.

Other possible sources of mercury exposure include:

- airborne mercury vapors from spills, incinerators, and industrial processes;
- workplace contamination through air vapors or skin contact;
- folk practices that include the use of mercury;
- release of mercury from dental work and medical treatments.

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## Survey Gives Closer Look at Prevalence of Asthma

Increases in asthma prevalence, seen in national data, have led to growing recognition of the substantial public health burden of childhood asthma. The Department of Health began estimating the prevalence rate of asthma in Washington State in 1997. A recent survey of adolescents allowed closer examination of prevalence data.

We compared data on the prevalence rate of asthma in adolescents from two sources: the Behavioral Risk Factor Surveillance System (BRFSS) and the Youth Risk Behavior Survey (YRBS). Throughout the year, BRFSS interviewers use a computer-assisted survey to conduct telephone interviews of persons aged 18 and over,

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## Asthma Survey *(from page 1)*

who respond for the child. From prior BRFSS data, we know that about 40% of households have children, and that about 16% of those have a child with asthma. The YRBS is a classroom paper-and-pencil survey, relies upon self-report, and was administered in April 1999.

We examined the 1999 data from BRFSS "proxy respondents" for children aged 13–17 and YRBS self-report data from children in grades 9–12. Most children in these grades are in the age group 13–17 for most of the school year, though some high school seniors are older.

The BRFSS asks: "Has a doctor ever said that that one of your children had asthma?" and "Does this child still have asthma?" The YRBS asks: "Have you ever been told by a doctor or other health professional that you had asthma?" and "During the past 12 months, have you had an asthma attack or taken asthma medication?" These 1999 surveys included 3,608 BRFSS respondents and 4,022 YRBS respondents.

### Self-Report Gives Higher Prevalence Rates

Responses from the two surveys show that self-report results in a higher prevalence estimate, both for current asthma and ever had asthma (Table 1). These differences are statistically significant and meaningful. The prevalence rate of asthma in adolescents from self-report is about double that seen with proxy-report: 1.7 times as high for ever had asthma, and 2.1 times as high for current asthma.

The children in the YRBS survey are slightly older, and thus have had more time to receive a diagnosis of asthma. However, this factor would not explain the higher prevalence rate of current asthma. In the YRBS data, we found no trend for increased asthma prevalence (either current or ever had) with higher school grade.

### Sentinel Physicians Needed for Influenza Surveillance

The Washington State Department of Health, in conjunction with the Centers for Disease Control and Prevention, seeks sentinel physicians for influenza surveillance during the 2001–2002 season. Contact Phyllis Shoemaker, 206-361-2830 by August 31.

### For More Information:

Contact the DOH Office of Non-Infectious Conditions Epidemiology: Steven Macdonald at 360-236-4253, [steven.macdonald@doh.wa.gov](mailto:steven.macdonald@doh.wa.gov); or Lillian S. Bensley at 360-236-4248, [lillian.bensley@doh.wa.gov](mailto:lillian.bensley@doh.wa.gov);

Several reasons may explain these differences, including "instrument effects," underreporting by proxies, and overreporting by adolescents. Instrument effects may arise from differences in wording between similar questions in the two surveys. However, the magnitude of the effects is likely to be small.

Underreporting may occur if proxies are unaware of the condition or are "in denial." The BRFSS proxy is usually the parent, although a grandparent or unrelated adult may be the respondent. However, asthma is not a hidden disease, nor a disease with stigma, and it is hard to hide even if desired. Although a parent or caregiver may be in denial, the research literature gives little evidence of such situations.

Overreporting by adolescents is another possible explanation for the higher prevalence estimates in YRBS, although the reason is unclear. One plausible explanation is that children are likely to be less knowledgeable about a precise medical diagnosis, and some may inaccurately label their condition as asthma. While it is true that a parent or caregiver may be more knowledgeable than a teenager, there no reason for the effect to be differential: the less knowledgeable child would seem equally likely to underreport as to overreport, all other factors being equal.

But, all other factors may not be equal. Asthma may have a perceived beneficial "status." For example, a teen may gain in social status if the child's peers view asthma as a sympathy-inducing disease. It is also plausible that excused absences from school may be a desired benefit.

These data confirm that asthma in children is a substantial public health burden. It is unknown whether the true prevalence rate is closer to proxy report or self-report, but it probably lies somewhere between the two estimates.

**TABLE 1: Comparison of proxy reports and self-reports of asthma in adolescents**

	Proxy-reported % (95% CI)	Self-Report % (95% CI)
Ever had asthma	12.3 (9.9-14.6)	20.9 (19.6-22.2)
Current asthma	7.1 (5.4-9.2)	14.8 (13.7-15.9)

# Monthly Surveillance Data by County

June 2001\* – Washington State Department of Health

County	E. coli O157:H7	Salmonella	Shigella	Hepatitis A	Hepatitis B	Non-A, Non-B Hepatitis	Meningococcal Disease	Pertussis	Tuberculosis	Chlamydia	Gonorrhea	AIDS	Pesticides†	Lead\$#
Adams	1	0	0	0	0	0	0	0	0	2	0	0	1	0/0
Asotin	0	0	0	0	0	0	0	0	0	3	1	0	0	0/0
Benton	0	2	1	4	0	0	0	0	0	14	1	0	2	0/7
Chelan	0	0	0	0	0	0	0	0	0	10	0	0	4	2/24
Clallam	0	0	0	0	1	0	0	0	0	5	1	1	0	0/#
Clark	1	1	0	0	2	0	1	1	0	47	8	0	1	0/7
Columbia	0	0	0	0	0	0	0	1	0	0	0	0	0	0/0
Cowlitz	0	0	0	0	2	0	1	0	0	20	0	0	0	1/41
Douglas	0	0	0	0	0	0	0	0	0	6	0	0	2	0/#
Ferry	0	0	0	0	0	0	0	0	0	3	1	0	0	0/0
Franklin	0	0	0	0	0	0	0	0	0	8	1	1	2	0/#
Garfield	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Grant	0	3	0	0	0	0	0	0	0	12	1	0	5	2/42
Grays Harbor	0	1	0	0	0	0	0	0	0	8	1	0	0	0/#
Island	0	0	1	0	0	0	0	0	0	2	0	0	0	0/9
Jefferson	0	0	0	0	0	0	0	6	0	1	0	0	0	0/#
King	3	23	5	2	2	3	0	9	13	316	115	21	4	1/34
Kitsap	0	0	1	2	0	0	0	0	0	47	10	1	0	0/#
Kittitas	1	0	0	0	0	0	0	0	0	3	0	0	0	0/#
Klickitat	0	0	0	0	0	0	0	0	0	1	0	0	1	0/0
Lewis	0	0	0	0	0	0	0	0	0	12	0	0	1	0/#
Lincoln	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Mason	0	0	0	1	0	0	0	0	0	6	0	1	0	0/0
Okanogan	0	0	0	0	0	0	0	0	0	5	0	0	2	0/#
Pacific	0	0	0	0	0	0	0	0	0	1	0	0	0	0/0
Pend Oreille	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Pierce	0	8	0	3	0	0	2	4	1	183	44	5	1	2/39
San Juan	0	0	0	0	0	0	0	0	0	3	0	0	1	0/0
Skagit	1	0	2	1	0	0	0	0	0	26	2	0	0	0/#
Skamania	0	0	0	0	0	0	0	0	0	1	0	0	0	0/0
Snohomish	2	5	1	0	0	0	0	1	7	111	21	0	1	0/9
Spokane	0	1	0	0	0	0	0	0	0	52	8	1	0	0/20
Stevens	0	0	0	0	0	0	0	0	0	1	0	0	0	0/0
Thurston	0	0	1	0	0	0	1	0	0	7	0	1	1	0/#
Wahkiakum	0	0	0	0	0	0	0	0	0	0	0	0	0	0/#
Walla Walla	0	0	0	0	0	0	0	0	1	10	1	0	1	2/23
Whatcom	0	2	1	0	8	0	0	0	0	6	1	0	2	0/8
Whitman	0	0	0	0	0	0	0	0	0	9	2	0	1	0/0
Yakima	0	0	0	0	0	0	0	0	2	45	8	1	5	0/8
Unknown														0/0

Current Month	9	46	13	13	15	3	5	22	24	986	227	33	38	10/301
June 2000	26	32	19	12	14	3	6	57	112	962	158	34	67	20/349
2001 to date	26	208	83	52	59	16	43	67	29	6818	1459	270	97	76/2301
2000 to date	52	206	316	146	41	12	30	189	128	6391	1112	255	169	62/2093

\* Data are provisional based on reports received as of June 30, unless otherwise noted.

† Unconfirmed reports of illness associated with pesticide exposure.

\$# Number of elevated tests (data include unconfirmed reports) / total tests performed (not number of children tested); number of tests per county indicates county of health care provider, not county of residence for children tested; # means fewer than 5 tests performed, number omitted for confidentiality reasons.



## WWW Access Tips

For more information on the mercury advisory, refer to the Department of Health web site on "Fish Facts For Healthy Nutrition" at: [www.doh.wa.gov/fish](http://www.doh.wa.gov/fish)

### Mercury References:

<sup>1</sup>National Research Council. *Toxicological Effects of Methylmercury*. Washington, DC: National Academy Press, 2000.

<sup>2</sup>Center for Disease Control and Prevention. *Morbidity & Mortality Weekly Report*. Blood and hair mercury levels in young children and women of childbearing age. *MMWR* 2001; 50(09):140-143.

## Mercury in Fish *(from page 1)*

### Health Effects

Health problems caused by mercury are most severe for the developing fetus and for young children. Pregnant women who eat fish contaminated with large amounts of methylmercury run the risk that their babies will have central nervous system changes that can affect their baby's ability to learn and possibly damage to the heart or blood vessels. In adults, methylmercury can lead to problems of the central nervous system and possible adverse effects on the cardiovascular system.

Based on human and animal data, the International Agency for Research on Cancer (IARC) and the Environmental Protection Agency (EPA) have classified methylmercury as a "possible" human carcinogen. This means that mercury has produced cancer in two animal species, but that evidence is not adequate to say that it causes cancer in humans.

Reliable and accurate ways to measure mercury in humans require tests of blood, urine, or hair samples, and must be performed in a doctor's office or in a health clinic. Most tests do not determine the form of mercury exposure. Hair analysis is considered useful for exposures to methylmercury, and may yield results for exposures within the past year.

Choosing to eat fish low in mercury is an important strategy to protect health. The long-term strategy for reducing exposure to mercury is to lower concentrations of methylmercury in fish by limiting mercury

### About Mercury

Mercury is a metal that occurs naturally in rocks, soils, water, and air. It may be released into the environment as a result of volcanic activity. Mercury also comes from industrial pollution, especially the burning of coal and other fossil fuels and from burning household or industrial wastes. Mercury compounds settle into sediments of lakes, rivers, and oceans, where bacteria convert the inorganic mercury compound to methylmercury. Fish primarily absorb methylmercury from the prey they eat, and also from water passing over their gills.

releases into the atmosphere from burning mercury-containing fuel and waste and from other industrial processes. Contaminants like mercury that are released into the atmosphere today may end up on our dinner table tomorrow.

## Calendar

### 8th Annual Joint Conference on Health

October 10, Yakima

The conference theme is *Health Disparities in a World Without Borders*, sponsored by the Washington State Public Health Association in cooperation with the Washington State Department of Health and the Yakima Health District. For information, visit the web site at [www.wspha.org](http://www.wspha.org)

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